What is claimed is:

1. A method of shaping quantization noise, comprising:

receiving a predetermined quantization noise threshold allowed during quantization of sampled audio data and quantization noise energy information of quantized MDCT coefficients of a plurality of frequency bands of an audio frequency range; and

attenuating quantization noise energy of quantized MDCT coefficients of a predetermined number of the plurality of frequency bands, wherein differences between the predetermined quantization noise threshold and the quantization noise energy of the quantized MDCT coefficients are relatively large.

2. The method of claim 1, wherein the predetermined quantization noise threshold is calculated in a psychoacoustic model.

3. The method of claim 1, wherein the quantization noise energy is attenuated by increasing a scale factor band gain.

4. A method of shaping quantization noise, comprising:

during compression of an audio signal at a predetermined bit rate, determining whether quantization noise of a plurality of frequency bands falls below a threshold noise level calculated in a psychoacoustic model; and

if the quantization noise of the plurality of frequency bands does not fall below the threshold noise level, shaping the quantization noise of the

plurality of the frequency bands to be substantially equal to the threshold noise level, at or within an offset error.

5. The method of claim 4, wherein the quantization noise of the plurality of frequency bands is shaped by adjusting a scale factor band gain.

6. A method of shaping quantization noise, comprising:

calculating a total quantization noise of quantized MDCT coefficients and a sum of quantization noise thresholds calculated in a psychoacoustic model;

comparing the total quantization noise of the quantized MDCT coefficients with the sum of the quantization noise thresholds; and

if the total quantization noise of the quantized MDCT coefficients is less than the sum of the quantization noise thresholds, attenuating quantization noise of a plurality of frequency bands, while if the total quantization noise of the quantized MDCT coefficients is greater than the sum of the quantization noise thresholds, attenuating the quantization noise in selected frequency bands of the plurality of frequency bands.

7. The method of claim 6, wherein the attenuating the quantization noise of the plurality of frequency bands comprises:

calculating a number of bits corresponding to a predetermined bit rate determined for compression of an audio signal and then setting the number of

bits with an adjustment of a common gain until a number of bits smaller than the calculated number of bits are used for coding; and

adjusting a scale factor band gain to adjust a degree the quantization noise is attenuated in the plurality of frequency bands.

8. The method of claim 6, wherein the attenuation of the quantization noise in the selected frequency bands comprises:

receiving an audio frame, quantizing MDCT coefficients to produce a quantization result, Huffman-coding the quantization result, calculating a number of bits used for the Huffman-coding, and setting the number of bits to use a number of bits smaller than the calculated number of bits in order to control a bit rate;

calculating quantization noise energy of the plurality of frequency bands of an audio frequency range to output calculated quantization noise energy;

storing scale factors used in the quantizing MDCT coefficients;

determining whether the calculated quantization energy is above a quantization noise threshold calculated in the psychoacoustic model, and if the calculated quantization energy is above the quantization noise threshold, shaping the quantized noise energy of the quantized MDCT coefficients to be reduced;

determining whether a scale factor band gain has increased in the plurality of frequency bands, and if the scale factor band gain has increased in

the plurality of frequency bands, ending the shaping quantization noise energy using the stored scale factor;

if the scale factor band gain has increased in less than the plurality of the frequency bands, then if the quantization noise energy is shaped to fall within the quantization noise threshold in the psychoacoustic model only when the scale factor band gain increases to be above the predetermined threshold, ending the shaping of the quantization noise using the stored scale factor, and if the scale factor band gain does not increase to be above the predetermined threshold, then readjusting the bit rate.

9. The method of claim 8, wherein the bit rate is controlled by adjusting a common gain.

10. The method of claim 8, wherein the quantization energy of the quantized MDCT coefficient is controlled by adjusting the scale factor band gain.

11. The method of claim 6, wherein in the attenuating of the quantization noise in the selected frequency bands, a scale factor is adjusted in a predetermined number of frequency bands according to a ranking of noise-to-mask ratios of scale factor band gains of the predetermined number of frequency bands in which the quantization noise of the quantized MDCT coefficient is greater than the quantization noise threshold of one of the predetermined number of frequency bands in the psychoacoustic model.

12. An apparatus for adjusting a quantization noise distribution, comprising:

a quantization noise calculator that calculates a total quantization noise of a quantized MDCT coefficient and a sum of quantization noise thresholds calculated in a psychoacoustic model;

a noise attenuation algorithm selector that compares the total quantization noise of the quantized MDCT coefficient with the sum of the quantization noise thresholds to determine whether a quantization noise attenuation is performed in a plurality of frequency bands or in selected frequency bands of the plurality of frequency bands;

a quantization noise attenuator that attenuates quantization noise of the plurality of frequency bands; and

a band selective quantization noise attenuator that attenuates quantization noise in the selected frequency bands.

13. The apparatus of claim 12, wherein the quantization noise attenuator calculates a number of bits corresponding to a predetermined bit rate determined for compression of an audio signal, sets the number of bits with the adjustment of a common gain until a number of bits smaller than the calculated number of bits are used for coding, and adjusts a scale factor band gain to adjust a degree to which quantization noise is attenuated in the plurality of frequency bands.

14. The apparatus of claim 12, wherein the band selective quantization noise attenuator adjusts a scale factor in a predetermined number of frequency bands of the plurality of frequency bands according to a ranking of noise-to-mask ratios of scale factor band gains of the predetermined number of frequency bands in which the quantization noise of the quantized MDCT coefficient is greater than the quantization noise threshold in the psychoacoustic model.

15. A computer-readable recording medium for recording a computer program code for enabling a computer to provide a service of executing a quantization noise distribution adjustment method, the service comprising the steps of receiving a predetermined quantization noise threshold allowed during a quantization of sampled audio data and quantization noise energy information of quantized MDCT coefficients of a plurality of frequency bands of an audio frequency range and attenuating quantization noise energy of quantized MDCT coefficients of a predetermined number of the plurality of frequency bands, wherein differences between the predetermined quantization noise threshold and the quantization noise energy of the quantized MDCT coefficients are relatively large.

16. The method of claim 1, wherein the differences are first differences which are relatively larger than second differences between the predetermined quantization noise threshold and the quantization noise energies

of the quantized MDCT coefficients not in the predetermined number of frequency bands.

17. The computer-readable recording medium of claim 15, wherein the differences are first differences which are relatively larger than second differences between the predetermined quantization noise threshold and the quantization noise energies of the quantized MDCT coefficients not in the predetermined number of frequency bands.